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Toward a Contingency Model of Strategic Risk Taking

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Toward a Contingency Model of Strategic Risk Taking


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## Abstract

While the concept of risk is embedded in the process of strategic decision making, there has been little systematic treatment of risk in the strategic management field. Most often, risk is conceptualized in terms of uncertainty about financial returns or some equivalent performance measure. In this paper, the need for a wider concept of strategic risk is discussed and a model of strategic risk taking incorporating environmental, industry, organizational, decision maker and problem variables is put forward. The model is intended both as a preliminary conceptualization of strategic risk taking and as a stimulant for future research about risk taking and strategic management. Relevant research from a number of disciplines is summarized and the potential impacts of particular variables on the propensity to take strategic risks are examined both diagrammatically and in tabular form.





## TOWARD A CONTINGENCY MODEL OF STRATEGIC RISK TAKING

If you can make one heap of all your winnings  
And risk it on one turn of pitch-and-toss,  
And lose, and start again at your beginnings  
And never breathe a word about your loss;  
...Yours is the earth, and everything that's in it,  
And--which is more--you'll be a Man, my son.  
Rudyard Kipling

The image of the corporate executive as a bold, risk-taking, wheeler-dealer has become part of the folklore of American business. Durant, Ling, Lear are names which conjure up pictures of strategists willing to make one heap of all their profits and risk it on one project, one idea, one foray into the stock market. Yet when Sloan (1965) describes William Durant as a gambler, there is a clear note of disfavor in his words. Although Durant's risk taking had built General Motors into a \$575 million enterprise, Sloan viewed Durant's behavior as clearly inappropriate for the more risk-averse and conservative management style characteristic of a large corporation.

In recent years, interest in the importance of risk taking in strategy has grown tremendously (Bettis, 1983). Strategists' risk propensities are considered important influences on corporate strategy. Ted Turner's risk-taking nature is viewed as responsible for Turner Broadcasting's heavy borrowing to finance entry into the new field of 24 hour cable news programming (Huey, 1980). Concern is also expressed regarding how to include risk considerations in strategic decision making. Moore and Thomas (1976) describe the Rolls Royce decision to accept the ill-fated RB-211 jet engine contract with Lockheed as an instance where managers were unsure how to incorporate situational risk into their strategic plans. Strategists are aware that corporate disasters can occur if risk is handled improperly.

The process of handling risk appropriately has been problematic and has also received attention recently. Loomis (1983) demonstrates how ITT's management became so seduced by the immense size of a Quebec forest that it quickly decided to invest in a multi-million dollar project to build a large scale chemical cellulose mill there. Before the decision was made, no formal analysis was performed to trace the eventual consequences of the strategy. ITT committed quickly and intuitively, ignoring an awesome collection of technical risks concerning plant operations, market risks of chemical cellulose, and political and labor risks in French-speaking Quebec. Subsequently, these risks were fully examined but at too late a stage to avoid a \$600 m. loss on the project.

Tully (1983) charts the decline of Dome Petroleum, a major Canadian oil company, due to excessive informality in risk handling. Senior management pursued the continued acquisition of oil resources and demonstrated an "escalating commitment" to this acquisition strategy. In the corporate growth process, Dome's leverage ratio shot up to 6 to 1 "...And apparently no one asked the basic 'what if' questions--what, for instance, if oil prices don't keep rising (p. 91)?"

It is apparent, therefore, that many questions about risk need to be addressed in strategy. Are there times in a corporation's life cycle when risk taking is common--for example, when either growth or innovative change is sought? Business Week (Biotechnology's new strain..., 1983) reports that venture capitalists are seeking to support entrepreneurial, risk-taking activity by young emergent companies, particularly in the areas of R & D and new-product growth. However, older companies are also realizing that to maintain growth they must attempt to capture the risk-taking entrepreneurial spirit, and are setting up smaller, wholly owned R & D outfits. In contrast, are there environments which virtually guarantee the downfall of a corporate gambler? Additional

questions involve identifying variables that influence the direction of various corporate strategists' risk-taking styles. By examining potentially important variables, it may be possible to understand why strategists and corporations behave as they do, and eventually to develop some guidelines for corporate strategists to follow in formulating risk policies.

Therefore, this paper discusses strategic risk. It also proposes a conceptually based model of strategic risk taking which can be used to understand the nature of strategic risk and to formulate strategic risk policies.

### Strategic Risk

In consciously developing courses of action to achieve goals, strategists must structure ambiguous situations in a manner which enables them to reach a decision. Some decision makers consciously acknowledge the potential risks of failure to meet target goals and choose to bear or not bear the risks associated with their available strategic alternatives. Others refuse to deal with risk and define their choice situation as fully certain even when it is not. The level of risk present and the risk-handling behavior of the strategic decision maker in formulating intended strategy (Mintzberg, 1978) may often be critical to strategic success. Also the emergent pattern of realized strategies perhaps can be understood only by studying the risk-taking propensities of the decision makers as they interact with particular decision situations. What is clear, however, is that because of the nature of strategy, risk is embedded in most long range decisions. Yet risk may be ignored or misunderstood by strategists and there has been little systematic attempt to deal with risk in the field of business policy. A useful concept of the nature of strategic risk must first be developed.

Risk is typically defined in texts (e.g., Knight, 1921) as a condition where the consequences of a decision and the probabilities associated with the

consequences are known entities. Yet in making strategic decisions, planners rarely, if ever, even know all the possible results which might occur, or the probabilities of their occurrence. Theorists would speak of this condition as uncertainty. Conditions of uncertainty exist when problem structure (Mason & Mitroff, 1981), consequences, and probabilities are not fully known. There remains considerable overlap within strategy literature in the usage of the terms "risk" and "uncertainty."

Various authors have presented alternative conceptions of risk. Many conceive of risk as expected value, encompassing both the outcomes of a decision and some representation of the probability of the outcomes (Nickerson & Feehrer, 1975). In other studies (Sjoberg, 1980; Vlek & Stallen, 1980), outcomes and probabilities of loss are suggested as separate proxies for risk. Variance or dispersion of outcomes has also been a common surrogate for risk in both finance and psychological literature (Libby & Fishburn, 1977). Variance implies incomplete information and is often used alone as an objective measure of inability to predict outcomes. When utilized with the mean to determine the efficient frontier in portfolio theory, it may also capture the outcome element of risk.

In strategic decisions a condition of risk usually exists since these decisions, by definition involve uncertain outcomes which in the long run are important to firm survival (Mintzberg, Raisinghani and Theoret, 1976) and about which complete information is unavailable (Ansoff, 1965). In this paper, corporate strategic risk taking is conceptualized very broadly. Risk taking will be defined as corporate strategic moves which cause returns to vary, which involve venturing into the unknown, which may result in corporate ruin, where outcomes and probabilities may be only partially known and where hard to define goals may not be met. All of these elements are relevant to strategic risk taking in some context or another. The drawbacks of settling on a single



faceted definition of risk taking are illustrated by examining a series of RCA's gambles (RCA may have..., 1982). RCA undertook entry into video discs, acquisition of CIT Financial Corporation and the need to improve operations in its base businesses of consumer electronics and NBC simultaneously. Each of these gambles is of a different type--venturing into the unknown with video discs, committing too large a portion of corporate assets to a division with poor odds of contributing significantly to profits (CIT), and borrowing heavily which could jeopardize attaining profit goals. Only a broad definition of strategic risk taking can encompass the riskiness of three such diverse moves. By preserving a wide definition, it will be possible to explore what industry and firm characteristics are related to types of risk taking.

An additional problem of defining risk is identified by Fitzpatrick (1983). In his review of work on political risk in international business, he found that while the common thread underlying political risk definitions was uncertainty or environmental discontinuity, most definitions and assessment techniques were event-centered rather than process-centered. Often underlying ongoing environmental processes were ignored in risk assessment. This indicates the importance of developing a dynamic approach to strategic risk.

Eventually strategic management will need a refinement of its risk definition and a more complete classification system of risks which relates meaningfully to handling strategic problems. Risky situations vary. Actions classified as risk taking will also vary. It is necessary to examine what common elements may be used by strategists, beyond expected value, to aid comprehension of the risk parameters they must contend with in each decision situation.

Vlek and Stallen (1980) from a psychological perspective and Rowe (1977) from a cost-benefit perspective propose that the various aspects of risk can be grouped into the following categories (see Table 1):

[Insert Table 1 about here]

voluntariness of exposure, controllability of consequences, timing of unpleasant consequences (discounting in time), locus of unpleasant consequences in social-geographical space (discounting in space), level of information about the risky activity, magnitude of impact and group/individual factors. Although this work was undertaken mainly in the area of hazard management and societal risk assessment, it may be useful to categorize strategic risk in terms of these characteristics. For instance, use of a magnitude of impact classification was suggested by Hofer and Haller (1980). They focused on the differences between asset protection risk and profit/cash flow risk in evaluating strategic options for multinational corporations. By using this classification scheme, strategists will be more aware of the situational elements which are putting them in a risk position.

#### Risk in Strategy Formulation

A method of characterizing strategic risk is useful only to the extent it is incorporated into the strategy formulation process. However, risk has rarely been addressed as a specific area of study in strategy formulation. Some explicit attention to the role of risk in strategic planning is given by Gluck, Kaufman & Walleck (1980). They identified four phases in the development of strategic management. By Phase 3, Externally Oriented Planning, the alternatives to be considered are offered with accompanying risk/reward profiles for various objectives. However, top managers soon learn that important choices are being made by planners and managers far down in the organization's hierarchy without top level participation. This indicates a need for progression to Phase 4, where Strategically Managed companies value entrepreneurial drive throughout the organization, set ambitious goals (which may require risk taking for accomplishment) and are aware of the need for tradeoffs in negotiating objectives. This

model encourages strategists to examine the implicit risk policies which are bound to their phase of strategy formulation and the nature of the goals they have set, and suggests relationship between planning methods and risk taking, but does not offer a full treatment of the risk-strategy issue.

In the past, concern with levels and types of risk has often been incorporated into the strategy formulation process in a number of simplified ways. Hertz (1979) and Hertz and Thomas (1983b) identified five ways financial decision makers handled uncertainty: (1) by attempting to obtain more accurate forecasts, (2) by making empirical adjustments of factors such as returns to account for risk elements, (3) by revising cutoff rates, usually raising rate of return standards for risky projects, (4) by using estimates of best, probable and worst cases to indicate ranges of outcomes, and (5) by considering selected probabilities on one factor. In a similar vein, Mascarenhas (1982) shows five common risk-coping devices used in ten international projects.

Hertz and Thomas's treatment of risk in policy decisions involves the use of risk-based profiles involving cumulative probability distributions of different return criteria calculated for various alternatives under all probable ranges of variables. When these profiles are available for strategic analysis, along with a stated corporate risk policy (Hertz, 1968; Hertz & Thomas, 1983b), strategic decisions may be made using the risk analysis as part of a managerial debate involving conflicting viewpoints and assumptions. Ulvila and Brown (1982) show how risk profiles were used by the ALL Division of Cutler-Hammer Ltd. to evaluate the alternative options in a situation involving the potential purchase of a weapons system patent.

Table 2 presents a more complete treatment of the major steps necessary in

[Insert Table 2 about here]

dealing with risk in developing strategy. Three main aspects of risk handling are presented: Risk Identification, Risk Estimation and Risk Evaluation (Rowe, 1977). Risk Identification is concerned with the reduction of descriptive uncertainty in regard to the risk situation. At this stage, attention is directed towards problem definition and assessing the influence of the human element in the decision-making process. Risk Estimation involves the reduction of measurement uncertainty and addresses the difficulties in estimating relevant values, facts and uncertain events. Risk Evaluation is concerned with those strategic actions leading to either risk acceptance or rejection, and to assessing the quality of those actions. Conceptually, these processes overlap and together provide a basis for risk assessment.

#### Risk Identification

In the Risk Identification Phase, the classification scheme of Table 1 may aid strategists in depicting the extent of risk faced, the nature of the outcomes involved, the controllability of the risks, etc. This will be associated with risk perception by individuals and organizations. As outcomes are discussed, managers may or may not conceptualize the decision as a risky one. The factors influencing this conceptualization have been studied by numerous disciplines.

The elements of expected value calculations--probabilities and outcomes--influence individual risk perception and acceptance (Nickerson & Fehrer, 1975). However, Libby and Fishburn (1977) in their review of studies of managerial risk taking, conclude that executives use a more complex model to conceptualize risk. Usually

...risk is combined with return in a hybrid model that combines compensatory and noncompensatory decision rules. A model in which risk first plays a role as a ruin constraint and then interacts with the mean as a tradeoff parameter defined as target semivariance is most supportable (p. 289).



They conclude that managerial conceptualization of risk as the probability of below target return or some other below target parameter would seem to be most promising in understanding executives' decisions. Individuals' consideration of only the negative consequences at stake in a risk situation may also influence risk perception (Slovic, Fischhoff & Lichtenstein, 1981).

Risk perception has emerged as an area of concern in marketing. Uncertainty, decision consequences and information are viewed as critical to risk perception. Uncertainty in the processes of identifying goals and assigning them importance and in determining the effort necessary to achieve goals and the current level of goal attainment is one facet of risk perception (Bauer, 1967; Cox, 1967). Other elements involve the consequences of success or failure in meeting the goals and the amount of information available about a decision situation (Cox, 1967; Slovic, et al., 1981).

Information's importance is also studied by Amariuta, Rutenberg and Staelin (1979). Concerning investment risks in Eastern Europe, they find that more knowledgeable executives do perceive less political risk in Eastern Europe, but also more clearly recognize complications in doing business with Eastern European enterprises. Information's presence as an element in perceived uncertainty was also noted by Duncan (1972). Although enough information was available for the managers in his study to estimate probabilities in decision situations, they were unsure of how accurate their estimates were. Lack of information appeared to be an element in risk perception. Duncan's research also reinforces the importance of amount of possible loss in perception of risk or uncertainty.

#### Risk Estimation

As the Risk Identification Phase proceeds, effort also is expended in Risk Estimation. In strategic decisions, the negative value of various significant

outcomes may differ from person to person and problem structure may cause assessment difficulty. Investigation into the nature of risk faced and the usefulness of experts in mitigating risk or assessing it more effectively must proceed.

Techniques for conducting and interpreting probability assessments are fraught with problems (Moore & Thomas, 1972; Tversky & Kahneman, 1974; Wallstein & Budescu, 1983). For instance, high severity, rare event situations pose particular problems for decision makers because lack of frequency information makes conventional forecasting methods ineffective (Selvidge, 1972). Tools which have been used to help forecast rare events include fault trees (Fischhoff, Slovic, & Lichtenstein, 1978) and external calibrations involving a comparison between the rare event of interest and an unrelated reference event (e.g., Is it more likely that a catastrophic flood will occur than 10 heads on 10 tosses of a coin?).

Subjective expected utility (SEU) models have also been suggested as a means to deal with risk estimation (Slovic, Fischhoff & Lichtenstein, 1977). SEU models assume that people behave as though they maximize the sum of the products of utility and subjective probability estimates rather than more objective, actual outcomes and probabilities. Although this model is sufficient to explain behavior for simple gambles, Slovic, et al., conclude that the theory is insufficient to explain decisions under risk in more complex situations. It also offers no way to resolve questions of whose utility is most important in making strategic decisions.

#### Risk Evaluation

Eventually, the corporation moves into the Risk Evaluation Phase. It must decide how much risk it is willing to bear, and arrive at a method for assessing solutions in light of the risk policy. The model of strategic risk taking which

follows addresses the first problem and traces the effects of situational factors on corporate risk taking. The second problem is dealt with in the final section of the paper.

Models of Corporate Risk Taking. Two other models of corporate risk taking have been developed. Bettis, following earlier work by Rumelt (1974) and Montgomery (1979), attempts to treat risk considerations in modeling corporate strategy. He uses a simultaneous equation approach which treats risk as an endogenous variable. This model involves the following two equations:

$$\text{Firm Performance} = f (\text{Industry Characteristics, Strategy, Risk})$$

$$\text{Risk} = f (\text{Strategy, Industry Characteristics})$$

Risk is measured in terms of the standard deviation of return on assets whereas plant investment is used as a measure of industry characteristics and strategy is measured by classifying firms in terms of Rumelt's (1974) diversification strategy taxonomy. Bettis's initial results clearly demonstrate the critical necessity of including risk variables in the context of strategy analysis models.

Salter and Weinhold (1979), in their studies of diversification and acquisition, identified three models providing risk perspectives for the diversification decision. These models vary according to the level of analysis and the principal risk measure. The strategy model functions at the operating or SBU (strategic business unit) level and adopts the total risk measure suggested by judgmental approaches of the Hertz (1968) and Hertz and Thomas (1983b) type. The product/market portfolio model (Wind and Mahajan, 1981) operates at the corporate level and focuses upon business portfolio risk in terms of the ability to sustain long-term growth and attain a stable, successful cash flow profile. The risk-return model analyzes the firm from the capital market level and assesses the market-related systematic risk (or beta) measure. Salter and Weinhold argue

that these three risk models provide complementary perspectives on the creation of value and complementary criteria for analyzing corporate strategies.

Managerial Risk Taking. Risk taking by managers has been dealt with by several authors. Amihud and Lev (1981) advance a risk-reduction "managerial" motive for conglomerate merger. They argue that managers, as opposed to investors, engage in conglomerate mergers to decrease their largely undiversifiable "employment risk" (i.e., risk of losing their jobs, professional reputation, etc.). They support their hypothesis through two empirical studies.

Managerial motives in strategic risk taking are also suggested by the work of Staw (1981) and Tversky (1978). Staw argues that managers because of individual self-esteem needs and strong group norms for rationality in decision making feel the need to justify their decisions. These justification forces can lead to the risky behavior of escalating commitment in order to satisfy requirements of both "retrospective rationality" (the appearance of competence in previous actions) and "prospective rationality" (the need to address future oriented probabilities and values). Tversky points out that recent experimental studies have shown a managerial tendency towards risk-seeking when either ruin or extensive loss are likely to occur--this risk-seeking tendency can also reinforce the tendency to escalate commitment to a costly and perhaps unsuccessful course of action.

These models which incorporate risk issues in strategic planning and management all offer some ideas of use to decision makers and theoreticians. However, their contributions to a general model of strategic risk taking are fragmentary and typically directed toward other ends. Therefore, a need appears to exist for developing a structure which will enable more adequate assessment of strategic risk taking. Such a structure will be developed by drawing multiple frameworks and concepts for viewing risk from such disciplines as economics,



organizational behavior, management science and cognitive psychology. However, risk taking is conceptualized differently in many of these disciplines so their findings may be only generally applicable to corporate strategic risk taking. Also most studies have been done with individuals rather than corporations as subjects. Therefore, in order to apply some findings to a model, the corporation must be treated as a rational unitary actor (Allison, 1971).

Contingency Model of Strategic Risk Taking. A preliminary model for simplifying the decision regarding strategic risk taking is presented in Figure 1. The theoretical background underlying the model and an extensive literature review is developed in Baird and Thomas (1983). This model describes a company's current risk posture and predicts the outcome of their risk evaluation. However, it may also be used to suggest changes in corporate risk practices as the environment changes. Eventually, it may also be possible to use this as a framework for answering normative questions about more or less effective matches between risk taking and environmental variables. This last use of the model should be attempted only after the basic relationships are more adequately understood and the important variables identified.

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Insert Figure 1 about here

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It is hypothesized that major variables in the external and internal environment of the organization impinge on the strategists, whose resultant risk estimates are seen as interacting with the nature of the strategic problem under consideration to determine the willingness of the firm to accept the risk of that strategy (see also Table 1). The important variables are classified into five categories. The level of risk accepted by a firm (the risk evaluation) is determined by summing the risk indicators of each ring into a total score for

that firm's decisions. Thus,

$$R_s = E_r + I_r + O_r + P_r + DM_r$$

where  $R_s$  = Strategic risk taking

$E_r$  = General environmental risk indicators

$I_r$  = Industry risk indicators

$O_r$  = Organizational risk indicators

$P_r$  = Problem risk indicators

$DM_r$  = Decision maker risk indicators

Similarly, it may be possible to envision an axis on each ring of the model with increasing or high risk-taking likelihood on one pole and decreasing or low risk propensity on the other. Each ring, then, can rotate in relation to a particular strategic decision and the resultant action vector represents the sum (giving equal weights to each ring) of the tendencies from each ring. Alternatively, differential weights could be obtained by using a relatively simple type of multi-attributed procedure as suggested by Edwards (1976). Also, Saaty's (1980) Analytic Hierarchy Process could be used to derive relative weights based upon the implicit hierarchies involved in the underlying risk factors.

Within each ring or category, a number of variables contribute to the overall risk impetus of that ring. The component variables for each category are listed in Table 3 along with the direction of the hypothesized relationship

[Insert Table 3 about here]

and research or published opinion source to support the hypothesis where available. Again, the variables within each category are assumed to contribute equally to the risk-bearing stimulus for each of the five groups (although as stated above this can obviously be varied). For instance, the tendency toward risk taking would be greatest in a general environment where government regulation was decreasing, society placed high value on risk taking, the economy was booming and technological change was rapid.

Within several of the categories, there is going to be rather high interdependence with other variables in the same ring. For example, within the industry ring, there is likely to be a high positive correlation between the number of competitors and the intensity of competition; between capital intensity, degree of vertical integration, entry/exit barriers and stage in industry life cycle. At this point in the model development, it seems more important to disaggregate the broader categories into a large number of variables which could be measured and understood individually, than to perform a crude form of factor analysis and concentrate on the combination or interaction of a smaller number of variables. As the relationships are tested empirically, some variables will emerge as more important than others. However, at present, the variables receive equal, independent weights. Implicitly, this will result in a greater weighting on clusters of associated variables since their hypothesized effects on risk taking are exerted in the same direction and are assumed to sum into what may effectively be a single, broader and more powerful influence on strategic risk bearing. An additional result may be that using the model becomes somewhat more simplified since it may be possible to examine risk taking by firms exhibiting similar clusters of variables, e.g., compare the risk taking by old, large, divisionalized firms as opposed to risk taking by young, small firms with a single powerful entrepreneur in charge of strategy formulation.

Interaction effects may exist not only within each category, but also between categories. These influences are particularly strong in the industry, organizational and decision-maker categories. For example, if there is a strong influence toward risk taking in a particular industry, this may have an important effect on the risk-accepting tendencies of companies within that industry. Similarly, an important influence on individual decision makers may be the

risk-taking or risk-averse nature of the particular company milieu in which the manager has been socialized and presumably wishes to retain a job. Therefore, the equations for the industry, company and decision-makers are probably of the following form:

$$I_r = f(x_{i1}, \dots, x_{in}, E_r)$$

$$O_r = f(x_{o1}, \dots, x_{on}, I_r, DM_r, P_r)$$

$$DM_r = f(x_{dml}, \dots, x_{dmn}, O_r, P_r)$$

where  $E_r$  denotes environmental risk level

$I_r$  denotes industry risk level

$O_r$  denotes organizational risk level

$DM_r$  denotes decision-maker risk level

$P_r$  denotes problem risk level

and  $x_{ij}$ ,  $j=i, \dots, n$  are industry-specific risk variables

$x_{oj}$ ,  $j=i, \dots, n$  are organization-specific risk variables

$x_{dmj}$ ,  $j=1, \dots, n$  are decision-maker-specific risk variables.

The model of strategic risk taking presented here has been developed to stimulate research toward an enhanced understanding of the relationships between factors external and internal to the firm and the resulting willingness of the decision makers to pursue risk-seeking or risk-averse strategies. Since the relationships are so numerous and complex, an attempt has been made to disaggregate the global concepts into more narrow, discrete and testable units. However, hypothesized interrelationships between these units have also been suggested as an attempt to move toward synthesis of research findings. The necessity of incorporating both corporate and environmental characteristic into a model of risk taking is highlighted by the following statement regarding IBM's strategy in the computer industry, "When the dominant company's advantage wanes, seemingly perilous, tradition-shattering change can be the course of least risk" (Petre, 1983).



Handling Strategic Risk: Formal Analyses and Risk Debate. Numerous

variables which affect risk evaluation have been incorporated into the model presented in Figure 1. However, since corporate strategy is rarely formulated by a single individual, attention must also be paid to how group consensus on risk taking may be achieved. Kogan and Wallach (1964) and Janis (1972) document instances where group processes influence risk taking. Methods of strategy formulation must be assessed for their effect on corporate risk taking.

Such formal analyses as risk analysis (Hertz & Thomas, 1983), decision analysis (Keeney, 1982; Moore & Thomas, 1976; Raiffa, 1968; Ulvila & Brown, 1982) and cost-benefit analysis (Mishan, 1972) attempt to assess and understand risk through the application of analytical approaches and formal principles of rationality. Typically, such analyses are advanced as valuable by proponents because they are comprehensive, logically sound, practical, grounded in scientific method, open to evaluation by others and widely used (Keeney, 1982; Ulvila & Brown, 1982). Yet reference to Table 1 shows that many problems in applying analytical approaches for risk handling can occur through overly narrow problem definitions; through reliance on judgment and subjective assessment for interpreting the facts of a problem; through imprecise specification of values and goals; through the strong assumptions of human rationality inherent in the approaches and through the focus upon sensitivity analysis as a means of assessing decision quality.

Unfortunately the major drawbacks of such analyses are their lack of openness and explicit recognition of the different value systems implicit in strategic decisions. Commonly, criticism of analytic results is not encouraged and the role of dialogue and debate (Hertz & Thomas, 1983a; Mason & Mitroff, 1981; Sjoberg, 1980) in assessing and handling risk is often downgraded. If analytic approaches are to work in strategic risk analysis, then greater use

must be made of structured debate approaches (Mason & Mitroff, 1981; Schwenk & Thomas, 1983) in risk debate in order to ensure that different groups do not distort and twist analytic results to justify their own positions.

### Conclusions

Risk taking by individual decision makers is an extremely complex phenomenon. Risk taking by organizations as they formulate and realize strategies is an even more complex concept. Typically in the past this topic has been handled by ignoring it (at least in the area of strategy research) or by extrapolating from human research to principles of organizations' behaviors. The appropriateness of generalizing findings from individual to group to organizational levels of risk taking must be addressed when identifying critical research gaps in strategic risk taking. However, ignoring risk as a variable or area of study critical to understanding strategic management simply because it is too complex to be understood easily, may leave the field of strategic management floundering in its attempt to understand, predict and influence firm performance without an important concept in its arsenal.

The proposed model of risk taking represents an attempt to formulate a framework which will serve as a basis for examination of normative and descriptive strategic risk taking. It highlights the need for additional work concerning the definition of strategic risk and clarification of the concept as it is pursued by researchers in strategy and other business fields. It is also anticipated that the model will stimulate research regarding the presence and importance of risk in strategic decisions and the process of risk perception by strategists.

Once this groundwork is laid, examination may proceed concerning the identification of important variables which may influence selection of a risk policy. After these variables are identified and explored, the next step would

be to determine the nature of the relationships between the individual variables and risk-taking behavior as well as interaction between several variables and risk postures. However, the critical step on which this paper focuses is the development of a method for making the complex topic of strategic risk more comprehensible by delineating some parameters of that risk. By presenting a model and hypothesizing about the nature and direction of risk-taking relationships, interest in and attention to the area of strategic risk can be stimulated.

## References

- Allison, G. T. Essence of Decision: Exploring the Cuban Missile Crisis. Boston: Little, Brown and Company, 1971.
- Amariuta, I., Rutenberg, D. P., and Staelin, R. How American executives disagree about the risks of investing in Eastern Europe. Academy of Management Journal, 1979, 22, 138-151.
- Amihud, Y. and Lev, B. Risk reduction as a managerial motive for conglomerate mergers. Bell Journal of Economics, 1981, 12, 605-617.
- Armstrong, J. S. Some practical aspects of forecasting in organizations. Journal of Forecasting, 1982, 1, 3-23.
- Anderson, C. R. and Paine, F. T. PIMS: A reexamination. Academy of Management Review, 1978, 21, 602-612.
- Ansoff, H. I. Corporate Strategy. New York: McGraw-Hill, 1965.
- Armour, O. H. and Teece, D. J. Organizational structure and economic performance: A test of the multi-divisional hypothesis. Bell Journal of Economics, 1978, 9, 106-122.
- Arrow, K. J. Aspects of the Theory of Risk Bearing. Helsinki, Finland: Yrjo Johnssonin, 1965.
- Bain, J. S. Industrial Organization. New York: John Wiley, 1968.
- Baird, I. S. and Thomas, H. Risk taking and strategic management: Toward a conceptual integration. Working paper, 1983.
- Bauer, R. A. Consumer behavior as risk taking. In D. F. Cox (Ed.), Risk Taking and Information Handling in Consumer Behavior. Boston: Harvard University Press, 1967, 23-33.
- Beach, L. R. and Mitchell, T. R. A contingency model for the selection of decision strategies. Academy of Management Review, 1978, 3, 439-449.
- Beaver, W. H., Kettler, P. and Scholes, M. The association between market determined and accounting-determined risk measures. Accounting Review, 1970, 45, 654-682.
- Bettis, R. A. Risk considerations in modelling corporate strategy. Academy of Management Proceedings 1982, 22-25.
- Bettis, R. A. Modern financial theory, corporate strategy, and public policy: Three conundrums. Academy of Management Review, 1983, 8, 406-416.
- Biotechnology's new strain of R&D cash. Business Week, April 18, 1983, (2786), 104-105.
- Bowman, E. H. A risk/return paradox for strategic management. Sloan Management Review, 1980, 21, (3), 17-31.



- Brown, J. S. Risk propensity in decision making: A comparison of business and public school administrators. Administrative Science Quarterly, 1970, 15, 473-481.
- Cady, J. F. and Hunker, J. A. Legal risks in related diversification through acquisition. Paper presented at Strategic Marketing Conference, University of Illinois, 1982.
- Carter, E. E. The behavioural theory of the firm and top level corporate decisions. Administrative Science Quarterly, 1971, 16, 413-428.
- Caves, R. E. and Porter, M. E. From entry barriers to mobility barriers: Conjectural decisions and contrived deterrence to new competition. Quarterly Journal of Economics, 1977, 91, (2), 244-262.
- Churchman, C. W. The Design of Inquiry Systems. New York: Basic Books, 1971.
- Cooper, A. C. Strategic management: New ventures and small business. In D. E. Schendel and C. W. Hofer (Eds.), Strategic Management. Boston: Little, Brown and Company, 1979, 316-326.
- Cox, D. F. (Ed.) Risk Taking and Information Handling in Consumer Behavior. Boston: Harvard University Press, 1967.
- Dickson, J. W. Perception of risk as related to choice in a two-dimensional risk situation. Psychological Reports, 1978, 43, 1059-1062.
- Duncan, R. B. Characteristics of organizational environments and perceived environmental uncertainty. Administrative Science Quarterly, 1972, 17, 313-326.
- Edwards, W. How to use multi-attributed measurement in social decision-making, Technical Report 00159-7-1-T, Social Science Research Institute, USC, August 1976.
- Elster, J. Risk, uncertainty and nuclear power. Social Science Information, 1979, 18, 371-400.
- Fischhoff, B., Slovic, P. and Lichtenstein, S. Fault trees: Sensitivity of estimated failure probabilities to problem presentation. Journal of Experimental Psychology: Human Perception and Performance, 1978, 4, 342-355.
- Fitzpatrick, M. The definition and assessment of political risk in international business: A review of the literature. Academy of Management Review, 1983, 3, 249-254.
- Fox, H. A framework for functional coordination. Atlanta Economic Review, 1973, 23, (6), 10-11.
- Funk, S. G., Rapoport, A. and Jones, L. V. Investing capital on safe and risky alternatives: An experimental study. Journal of Experimental Psychology - General, 1979, 108, 415-550.

- Fusfeld, Alan R. How to put technology into corporate planning. Technology Review, 1978, 80, (6), 51-55.
- Gluck, F. W., Kaufman, S. P. and Walleck, H. S. Strategic management for competitive advantage. Harvard Business Review, 1980, 58, (4), 154-161.
- Grey, R. J. and Gordon, G. G. Risk taking managers: Who gets to the top? Management Review, 1978, 67, (1), 8-13.
- Hertz, D. B. Investment policies that pay off. Harvard Business Review, 1968, 46, (1), 96-108.
- Hertz, D. B. Risk analysis in capital investment. Harvard Business Review, 1979, 57, (5), 169-181.
- Hertz, D. B. and Thomas, H. Decision and risk analysis in a new product and facilities planning problem. Sloan Management Review, 1983, 24, (2), 17-31.
- Hertz, D. B. and Thomas, H. Risk Analysis and its Applications. Chichester: John Wiley and Sons, 1982.
- Hofer, C. W. Toward a contingency theory of business strategy. Academy of Management Journal, 1975, 17, 784-810.
- Hofer, C. W. and Haller, T. P. Globescan: A way to better international risk assessment. Journal of Business Strategy, 1980, 1, 41-55.
- Hogarth, R. M. and Makridakis, S. Forecasting and planning: An evaluation. Management Science, 1981, 27, 115-138.
- Huey, J. Cable TV news link planned by Ted Turner may surprise skeptics. Wall Street Journal, May 23, 1980, 1.
- Janis, I. L. Victims of Group Think. Boston: Houghton Mifflin, 1972.
- Keeney, R. L. Decision analysis: State of the field. Technical Report 82-2, Woodward Clyde Consultants, San Francisco, 1982.
- Knight, F. H. Risk, Uncertainty and Profit. New York: Harper and Row, 1921.
- Kogan, N. and Wallach, M. A. Risk Taking: A Study in Cognition and Personality. New York: Holt, Rinehart, Winston, 1964.
- Lenz, R. T. Strategic capability: A concept and framework for analysis. Academy of Management Review, 1980, 5, 225-234.
- Libby, R. and Fishburn, P. C. Behavioral models of risk taking in business decisions: A survey and evaluation. Journal of Accounting, 1977, 15, 272-292.
- Loomis, C. J. How I.T.T. got lost in a bid bad forest. Fortune, 1979, 100, (12), 42-55.

- Markowitz, H. Portfolio Selection. New York: John Wiley and Sons, 1957.
- Mascarenhas, B. Coping with uncertainty in international business. Journal of International Business Studies, Fall 1982, 87-98.
- Mason, I. I. and Mitroff, R. O. Challenging Strategic Planning Assumptions, New York: John Wiley and Sons, 1981.
- Mintzberg, H. Patterns in strategy formation. Management Science, 1978, 24, 934-948.
- Mintzberg, H., Raisinghani, D. and Theoret, A. The structure of unstructured decision processes. Administrative Science Quarterly, 1976, 21, 246-275.
- Mishan, E. J. Elements of Cost Benefit Analysis. London: Allen and Unwin, 1972.
- Mitroff, I. I. and Mason, R. O. Business policy and metaphysics: Some philosophical considerations. Academy of Management Review, 1982, 7, 361-371.
- Montgomery, C. A. Diversification, Market Structure and Firm Performance: An Extension of Rumelt's Model. Unpublished Ph.D. dissertation. Purdue University, West Lafayette, Indiana, 1979.
- Moore, P. G. and Thomas, H. Measuring uncertainty. Omega, 1975, 3, 657-672.
- Moore, P. G. and Thomas, H. Anatomy of Decisions. London, England: Penguin Books, 1976.
- Myers, D. and Lamm, H. The group polarization phenomenon. Psychological Bulletin, 1976, 83, 602-627.
- Nickerson, R. N. and Fehrer, C. E. Decision making and training: A review of theoretical and empirical studies of decision making and their implications for the training of decision makers. Cambridge, Mass.: Bolt, Beranek & Newman, Inc., 1975.
- Petre, P. D. Meet the lean, mean, new IBM. Fortune, 1983, 108, (2), 68-82.
- Porter, M. E. Competitive Strategy. New York: The Free Press, 1980.
- Raiffa, H. Decision Analysis. Reading, Mass.: Addison-Wesley, 1968.
- RCA may have run out of time. Business Week, March 22, 1982 (2731), 30.
- Rowe, W. D. Anatomy of Risk. New York: John Wiley and Sons, 1977.
- Rumelt, R. P. Strategy, Structure and Economic Performance. Cambridge, Mass.: Harvard University Press, 1974.
- Saaty, T. L. The Analytic Hierarchy Process. New York: McGraw-Hill, 1980.

- Salter, M. S. and Weinhold, W. A. Diversification Through Acquisition. New York: Free Press, 1979.
- Schaninger, C. M. Perceived risk and personality. Journal of Consumer Research, 1976, 3, 95-100.
- Scherer, F. M. Industrial Market Structure and Economic Performance (2nd ed.). Chicago: Rand McNally, 1980.
- Schoeffler, S., Buzzell, R. and Heany, D. The impact of strategic planning on profit performance. Harvard Business Review, 1974, 52, (2), 137-145.
- Schwenk, C. R. and Thomas, H. Formulating the mess: The role of decision aids in problem formulation. Omega, 1983, 11, 239-252.
- Selvidge, J. E. Assigning Probabilities to Rare Events. Unpublished DBS Dissertation, Harvard Business School, 1972.
- Shah, K. and LaPlaca, P. J. Assessing risks in strategic planning. Industrial Marketing Management, 1981, 10, 77-91.
- Shepherd, W. G. The Economics of Industrial Organization. Englewood Cliffs, N.J.: Prentice-Hall, 1979.
- Sjoberg, L. The risks of risk analysis. Acta Psychologica, 1980, 45, 301-321.
- Sloan, A. P. My Years With General Motors. New York: Macfadden Books, 1965.
- Slovic, P. The relative influence of probabilities and payoffs upon perceived risk of a gamble. Psychonomic Science, 1967, 9, 223-224.
- Slovic, P. Information processing, situation specificity and the generality of risk-taking behavior. Journal of Personality and Social Psychology, 1972, 11, 128-134.
- Slovic, P. Psychological study of human judgment: Implications for investment decision making. Journal of Finance, 1972, 27, 779-800.
- Slovic, P., Fischhoff, B. and Lichtenstein, S. Behavioral decision theory. Annual Review of Psychology, 1977, 28, 1-39.
- Slovic, P., Fischhoff, B. and Lichtenstein, S. Characterizing perceived risk. In R. W. Kates & C. Hohenemser (Eds.) Technological Hazard Management. Cambridge, Mass.: Oelgeschlager, Gunn & Hain, 1981.
- Staw, B. M. The escalation of commitment to a course of action. Academy of Management Review, 1981, 6, 577-589.
- Tully, S. How Dome Petroleum got Crunched. Fortune, 1983, 107, (2), 84-91.
- Tversky, A. On the elicitation of preferences. In D. Bell, R. L. Keeney and H. Raiffa (Eds.), Conflicting Objectives in Decisions. New York: John Wiley, 1978.



Tversky, A. and Kahneman, D. Judgment under uncertainty: Heuristics and biases. Science, 1974, 185, 1112-1131.

Tversky, A. and Kahneman, D. The framing of decisions and the psychology of choice. Science, 1981, 211, 453-458.

Ulvila, J. W. and Brown, R. V. Decision analysis comes of age. Harvard Business Review, 1982, 60, (5), 130-142.

Vlek, C. and Stallen, P. J. Rational and personal aspects of risk. Acta Psychologica, 1980, 45, 273-300.

Wallsten, T. S. and Budescu, D. V. Encoding subjective probabilities. Management Science, 1983, 29, 151-173.

Wind, Y. and Mahajan, V. Designing product and business portfolios. Harvard Business Review, 1981, 59, 155-165.

TABLE 1  
IMPORTANT ELEMENTS OF STRATEGIC RISKS

<u>Relevant Dimensions</u>	<u>Indicators for Acceptance of Strategic Risk</u>	<u>Source</u>
Voluntariness of Exposure	<ul style="list-style-type: none"> <li>- Importance of intended benefits larger</li> <li>- Fewer comparable options</li> <li>- Correction of selected action is easier</li> <li>- Personal influence on the decision</li> </ul>	Rowe (1977) Vlek & Stallen (1980)
Controllability of Consequences	<ul style="list-style-type: none"> <li>- Outcomes can be contained, corrected or reversed</li> </ul>	Vlek & Stallen (1980) Elster (1974)
Discounting in Time	<ul style="list-style-type: none"> <li>- Intended benefits obtained sooner, undesired consequences delayed</li> </ul>	Rowe (1977) Vlek & Stallen (1980)
Discounting in Space	<ul style="list-style-type: none"> <li>- Benefits accrue here, risks faced by competitors or others</li> </ul>	Rowe (1977) Vlek & Stallen (1980)
Knowledge of Risky Situation	<ul style="list-style-type: none"> <li>- Knows more about benefits, less about risks</li> </ul>	Vlek & Stallen (1980)
Magnitude of Impact	<ul style="list-style-type: none"> <li>- More likely to be "high probability"/small loss than "low probability"/high loss</li> </ul>	Vlek & Stallen (1980)
Group/Individual Factors	<ul style="list-style-type: none"> <li>- Group, organizational or individual norms which favor risk acceptance</li> </ul>	Vlek & Stallen (1980) Janis (1972) Staw (1981)

TABLE 2

## COMMON CONCERNS IN HANDLING STRATEGIC RISK

I. RISK IDENTIFICATION PHASEUNCERTAINTY ABOUT PROBLEM IDENTIFICATION

- What is the extent of risk faced?
- What are available options?
- How large, and immediate, are the outcomes resulting from the impact of risk?
- Can the risk be controlled/reversed/avoided?

RISK PERCEPTION BY INDIVIDUALS AND ORGANIZATIONS

- How do individuals and groups conceptualize risk?
- What aspects of the problem seem most relevant?

II. RISK ESTIMATION PHASEASSESSMENT UNCERTAINTY ABOUT PROBLEM STRUCTURE

- What is the role, and quality, of expert judgment?
- How can the elements and causes of risk be better identified?
- How can probabilities of uncertain events be assessed?

UNCERTAINTY ABOUT VALUES

- Whose values are important?
- How can such values be assessed?
- Will one set of values tend to dominate?
- How can individuals be better handled in the management of the risk process?

III. RISK EVALUATION PHASEDECISION REGARDING RISK BEARING

- What are the important variables which affect strategic risk taking?

PROCESSES FOR ASSESSING THE SOLUTIONS TO HANDLE STRATEGIC RISK

- What is the role of formal analysis?
- What is the role of debate and dialogue in risky situations?
- Are analysis and risk debate interlinked in strategic risk situations?

TABLE 3  
HYPOTHESIZED EFFECTS OF VARIABLES ON RISK TAKING

<u>Variable</u>	<u>Direction of Risk Taking*</u>	<u>Source</u>
<u>External Environment - General</u>		
Government regulation	-	Shah & LaPlaca, 1981 Cady & Hunker, 1982
Social value on risk taking	+	
Economy	+	Shah & LaPlaca, 1981
Technological Change	+	Grey & Gordon, 1978 Cooper & Schendel, 1976 Fusfeld, 1978
<u>Industry</u>		
Ratio of public/private sector firms	-	Brown, 1970
Number of competitors	+	Bain, 1968
Competitive rivalry	+	Porter, 1980
Number of suppliers	+	Porter, 1980
Number of customers	+	Porter, 1980
Capital intensity	-	Scherer, 1980
Vertical integration	-	Shepherd, 1979
Capacity utilization rate	-	Lenz, 1980
Mobility barriers	-	Porter, 1980
Life cycle	-	Caves and Porter, 1979
		Fox, 1973
		Hofer, 1975
<u>Organization</u>		
Life cycle, Age	-	Cooper, 1979
Size (Sales or Assets)	-	Beaver, Kettler & Scholes, 1970
Financial strength	-	Arrow, 1965
Profitability, Return measures	+,-	Markowitz, 1959 Hertz & Thomas, 1982 Bowman, 1980

\*NOTE: The plus and minus signs indicate the direction of the relationship between the variable and risk taking. A + indicates a positive direct relationship so that as the variable increases (e.g., as government regulation increases, as the industry ages, as the number of competitors increases) the degree of risk taking also increases. A - indicates that as the variable increases, risk taking decreases.



TABLE 3 (continued)

<u>Variable</u>	<u>Direction of Risk Taking*</u>	<u>Source</u>
Organizational slack	+	Carter, 1971
Industry leadership	-	Shah & LaPlaca, 1981
Planners	-	
Incentive pay	+	Dickson, 1978
Divisionalized structure	-	Armour & Teece, 1978
Market share	-	Schoeffler, Buzzell & Heany, 1974
		Anderson & Paine, 1978
Aggressive goals	+	Grey & Gordon, 1978
Group decision making	+	Myers & Lamm, 1976
Unionization	-	
<u>Decision Maker</u>		
Age	-	
Self-confidence	+	Schaninger, 1976
Experience, Knowledge	+	Funk, Rapoport, & Jones, 1979
Preferences, Biases, Heuristics	+,-	Slovic, 1972; Hogarth & Makridakis, 1981
<u>Problem</u>		
Complexity	-	Vlek & Stallen, 1980
Ambiguity	-	Vlek & Stallen, 1980
Rate of change of problem elements	-	Beach & Mitchell, 1978
Importance of benefits	+	Vlek & Stallen, 1980
Ruinous losses	-	Libby & Fishburn, 1977
Reversibility	+	Elster, 1979
Controllability	+	Vlek & Stallen, 1980
Remote losses	+	Vlek & Stallen, 1980
Probability of loss	-	Slovic, 1967
Framing	+,-	Tversky & Kahneman, 1981

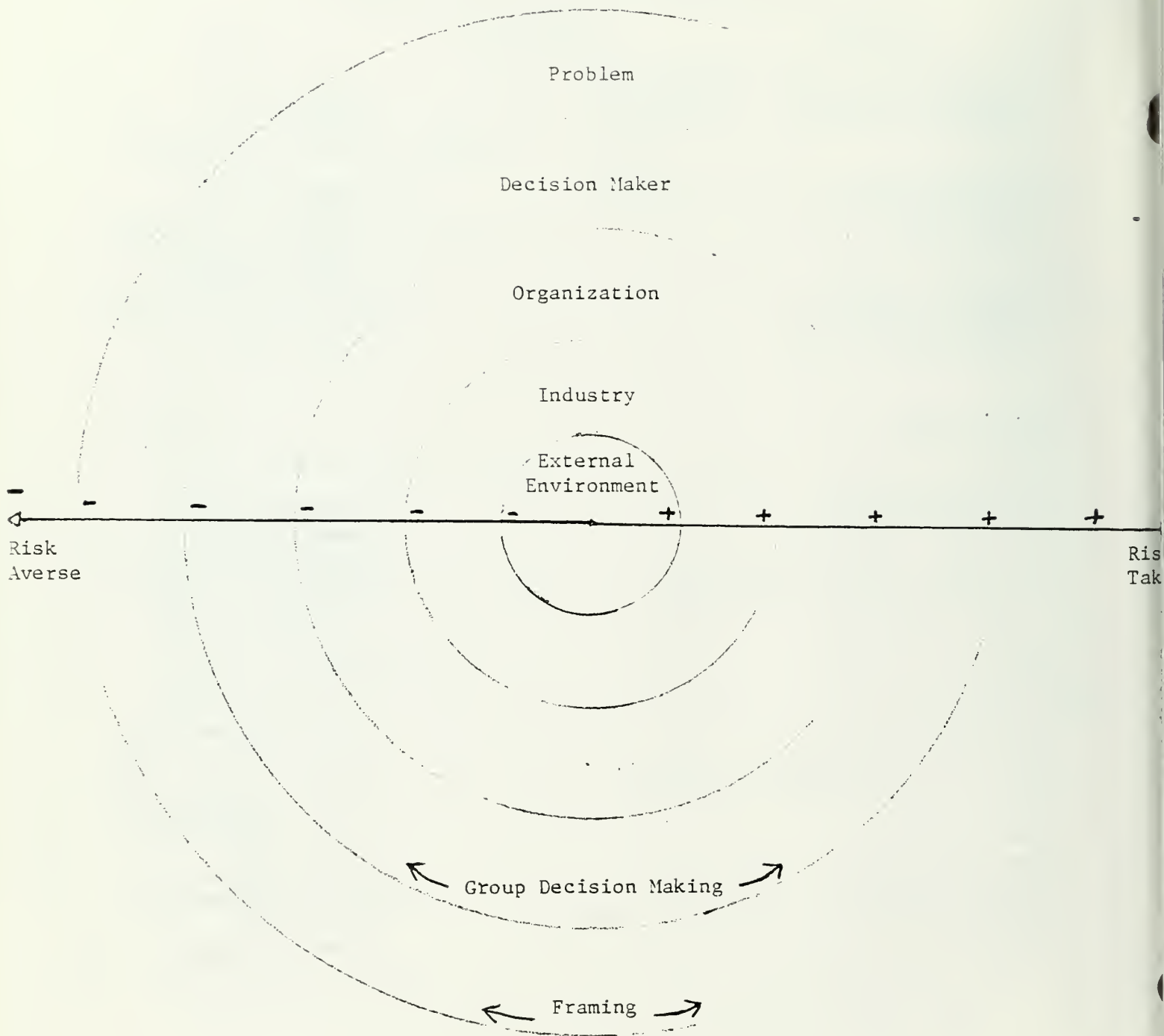


Figure 1

Contingency Model of Strategic Risk Taking

## KEYS TO VARIABLES AFFECTING RISK TAKING

Environmental Variables

Economy  
Governmental Regulation  
Technological Change  
Cultural Values

Industry Variables

Public-Profit  
Capital Intensity  
Industry Life Cycle  
Competition

Organizational Variables

Organizational Values  
Organizational Life Cycle  
Structure  
Incentives  
Wealth  
Market Share  
Information System  
Group Involvement in Strategy Formulation

Decision Maker

Self-confidence  
Knowledge  
Biases, Heuristics, Preferences

Strategic Problem

Reversibility and Controllability  
Outcomes  
Probabilities  
Variance of Outcomes  
Framing



















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